IN THE CLAIMS:

1. (Withdrawn) A method of analyzing microarray images, the method comprising the steps of:

receiving data from a microarray process,

modeling the microarray process to define a microarray model comprising at least one of target distribution defining a first independent sub-model and probe distribution defining a second independent sub-model,

comparing the received data with the microarray model in order to extract information from the data, and

outputting the information.

2. (Withdrawn) A method according to claim 1, wherein the data is received from a detector corresponding to a control target sample and a detector corresponding to a test target sample.

3. (Withdrawn) A method according to claim 2, wherein the model includes information about statistical similarity in the spot profile corresponding to each detector due to the spot profiles being formed from a common probe.

4. (Withdrawn) A method according to claim 1, wherein the microarray process is a DNA microarray process.

5. (Withdrawn) A method according to claim 1, wherein the extracted information is gene expression information.

6. (Withdrawn) A method according to claim 1 wherein when at least the second independent sub-model is employed in the modeling step, the second independent sub-model comprises a model of the spotting process.

7. (Withdrawn) A method according to claim 6, wherein the model of the spotting process includes an understanding of how adjacent spots interact.

8. (Withdrawn) A method according to claim 1, wherein the modeling step further comprises modeling the interaction between the background distribution of the received signal and at least one of target distribution and probe distribution.

9. (Withdrawn) A method according to claim 8, wherein the background distribution includes non-specific hybridication.

10. (Withdrawn) A method according to claim 1, wherein the modeling step further comprises modeling fluorescence to define a third independent sub-model.

11. (Withdrawn) A method according to claim 10, wherein the third independent sub-model includes information on the effect of DNA sequence on fluorescence.

12. (Withdrawn) A method according to claim 1, wherein the modeling step further comprises modeling hybridication to define a fourth independent sub-model.

13. (Withdrawn) A method according to claim 12, wherein the fourth independent sub-model includes information on the effect of sequence on hybridication.

14. (Withdrawn) A method according to claim 1, wherein the modeling step further comprises modeling spatial variation of target concentration.

15. (Withdrawn) A method according to claim 1, wherein the comparing step further comprises comparing the received image data with the microarray model in order to predict missing data.

16. (Withdrawn) A method according to claim 15, wherein the missing data is due to saturation in the device which creates the image data.

17. (Withdrawn) A method according to claim 1, wherein the modeling step further comprises modeling detector nonlinearity.

18. (Withdrawn) A method according to claim 1, wherein the structure of the microarray model is hierarchical.

19. (Withdrawn) A method according to claim 1, wherein the data received from the microarray process is image data.

20. (Withdrawn) A method according to claim 1, wherein the data received from the microarray process is pre-analyzed data.

21. (Withdrawn) A method according to claim 1, wherein the standard Markov chain Monte Carlo methods are employed.

22. (Previously Presented) An apparatus for analyzing microarray images, the apparatus comprising:

means for receiving data from a microarray process,

means for modeling the microarray process to define a microarray model comprising at least one of target distribution defining a first independent sub-model and probe distribution defining a second independent sub-model,

means for comparing the received data with the microarray model in order to extract information from the data, and

means for outputting the information.

23. (Previously Presented) An apparatus according to claim 22, wherein the data is received from a channel corresponding to a control target sample and a channel corresponding to a test target sample.

24. (Previously Presented) An apparatus according to claim 22, wherein the microarray process is a DNA microarray process.

25. (Previously Presented) An apparatus according to claim 22, wherein the extracted information is gene expression information.

26. (Previously Presented) An apparatus according to claim 22, wherein the means for modeling further comprises means for modeling the interaction between the background distribution of the received signal and at least one of target distribution and robe distribution.

27. (Previously Presented) An apparatus according to claim 22, wherein the means for modeling further comprises means for modeling fluorescence to define a third independent sub-model.

28. (Previously Presented) An apparatus according to claim 22, wherein the means for modeling further comprises means for modeling hybridication to define a fourth independent sub-model.

29. (Previously Presented) An apparatus according to claim 22, wherein the means for modeling further comprises means for modeling spatial variation of target concentration.

30. (Previously Presented) An apparatus according to claim 22, wherein the means for comparing further comprises means for comparing the received image data with the microarray model in order to predict missing data.

31. (Previously Presented) An apparatus according to claim 22, wherein the means for modeling further comprises means for modeling detector nonlinearity.

32. (Previously Presented) An apparatus according to claim 22, wherein the data received from the microarray process is image data.

33. (Previously Presented) An apparatus according to claim 22, wherein the data received from the microarray process is pre analyzed data.

Please add the following new claims:

34. (New) An apparatus according to claim 22, wherein the model includes information about statistical similarity in the spot profile corresponding to each detector due to the spot profiles being formed from a common probe.

35. (New) An apparatus according to claim 27, wherein the third independent sub-model includes information on the effect of DNA sequence on fluorescence.